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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,196	12/14/2000	Takayoshi Ode	FUSA 18.103	9198
26304	7590	06/21/2005	EXAMINER	
KATTEN MUCHIN ROSENMAN LLP			CHANG, EDITH M	
575 MADISON AVENUE			ART UNIT	
NEW YORK, NY 10022-2585			PAPER NUMBER	
			2637	
DATE MAILED: 06/21/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/737,196

Applicant(s)

ODE ET AL.

Examiner

Edith M. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-13,21-24 and 32-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32 and 33 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 3-13,21-24 and 34-37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2005 has been entered.

### ***Claim Objections***

2. Claims 3-13, 21-24 and 34-37 are objected to because of the following informalities:

Claim 3, line 3: "a transmit signal" is suggested changing to "a transmit signal  $x(t)$ "; lines 4 & 11: "means" is suggested changing to "is"; line 5 : "a transmit signal" is suggested changing to "the transmit signal", "the transmit signal to" is suggested changing to "the transmit signal  $x(t)$  to"; line 6: "this distortion compensation coefficient, a DA" is suggested changing to "the distortion compensation coefficient  $h_n(p)$ , a digital-to-analog (DA)"; line 10: "signal before" is suggested changing to "signal  $x(t)$  before"; line 12: "compensation coefficient" is suggested changing to "compensation coefficient  $h_n(p)$ "; lines 15-16: "the transmit signal, which is output from said predistortion unit by the distortion compensation processing that uses the distortion" is suggested changing

to "the transmit signal  $x(t)$  compensated with the calculated distortion"; lines 17 & 20:

"the distortion" is suggested changing to "the calculated distortion"; lines 21 & 25:

"transmit signal" is suggested changing to "transmit signal  $x(t)$ "; line 24: "coefficient by storing" is suggested changing to "coefficient  $h_n(p)$  by storing".

Claim 5, line 2: "transmit signal" is suggested changing to "transmit signal  $x(t)$ "; line 5: "the distortion compensation coefficient  $h_{n+1}(p)$  to  $h_{n+1}(p)/m$ " is suggested changing to "the calculated distortion compensation coefficient  $h_{n+1}(p)$  divided by  $m$ ".

Claim 6, line 2: "coefficient by storing" is suggested changing to "coefficient  $h_n(p)$  by storing"; line 4: "transmit signal" is suggested changing to "transmit signal  $x(t)$ ", "power" is suggested changing to "power  $P_{max}$ "; line 5: "transmit signal" is suggested changing to "transmit signal  $x(t)$ "; line 6: "power" is suggested changing to "power  $P_{max}$ ".

Claim 7, line 2: "the distortion compensation coefficient" is suggested changing to "the calculated distortion compensation coefficient  $h_{n+1}(p)$ "; line 8: "where  $h_{n+1}(p)$ " is suggested changing to "where  $\Delta h_{n+1}(p)$ ".

Claim 8, line 5: "a DA" is suggested changing to "a digital-to-analog (DA)"; line 6: "to distortion" is suggested changing to "to the distortion"; lines 9 & 13: "coefficient" is suggested changing to "coefficient  $h_{n+1}(p)$ "; line 12: "coefficient" is suggested changing to "coefficient  $h_n(p)$ ", "the distortion" is suggested changing to "the calculated distortion"; line 16: "signal  $x(t)$ " is suggested changing to "signal"; line 17: " $|h_{n+1}(p)_{n+1\ n+1}|^2$  of the distortion" is suggested changing to " $|h_{n+1}(p)|^2$  of the calculated distortion", line 18: "the distortion" is suggested changing to "the calculated distortion"; lines 21 & 25:

"coefficient" is suggested changing to "coefficient  $h(p)_{MAX}$ "; line 22: "correcting a distortion" is suggested changing to "correcting the calculated distortion"; line 23: "coefficient" is suggested changing to "coefficient  $h_{n+1}(p)$ ", "the distortion" is suggested changing to "the calculated distortion"; line 24: "coefficient" is suggested changing to "coefficient  $h_{n+1}(p)$ "; line 26: "the distortion compensation coefficient" is suggested changing to "the calculated distortion compensation coefficient  $h_{n+1}(p)$ ", line 27: "coefficient, said distortion" is suggested changing to "coefficient  $h(p)_{MAX}$ , said calculated distortion"; lines 28 & 32: "coefficient" is suggested changing to "coefficient  $h_n(p)$ "; line 29: "coefficient, and" is suggested changing to "coefficient  $h_{n+1}(p)$ , and"; line 30: "distortion compensation coefficient" is suggested changing to "calculated distortion compensation coefficient  $h_{n+1}(p)$ "; line 31: "coefficient, said" is suggested changing to "coefficient  $h(p)_{MAX}$ , said".

Claim 9, line 6: "signal  $x(t)$ " is suggested changing to "signal".

Claim 10, line 3: "of maximum" is suggested changing to "of the maximum"; line 4: "signal  $x(t)$ " is suggested changing to "signal".

Claim 11, line 2: "signal output form the predistortion unit" is suggested changing to "signal compensated"; line 4: "coefficient  $h_{n+1}(p)$  and" is suggested changing to "coefficient  $h_{n+1}(p)$  and"; line 6: "distortion" is suggested changing to "calculated distortion"; lines 6-7: "to the distortion compensation  $h_{n+1}(p)/m$ " is suggested changing to "divided by  $m$ ".

Claim 12, line 3: "coefficient by storing" is suggested changing to "coefficient  $h_n(p)$  by storing"; line 4: "a distortion compensation coefficient" is suggested changing to

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"the calculated distortion compensation coefficient  $h_{n+1}(p)$ "; line 5: "coefficient and storing" is suggested changing to "coefficient  $h(p)_{MAX}$  and storing",  
line 6: "by the distortion" is suggested changing to "by the calculated distortion";  
line 7: " $h_{n+1}(p)/m$ " is suggested changing to " $h_{n+1}(p)$  divided by  $m$ ", "square of the distortion" is suggested changing to "square of the calculated distortion";  
line 8: "coefficient is greater" is suggested changing to "coefficient  $h_{n+1}(p)$  is greater";  
line 9: "coefficient" is suggested changing to "coefficient  $h(p)_{MAX}$ ".

Claim 13, line 2: "corrects a distortion" is suggested changing to "corrects the calculated distortion"; line 3: "coefficient by" is suggested changing to "coefficient  $h_{n+1}(p)$  by".

Claim 21, line 4: "coefficient that" is suggested changing to "coefficient  $h(p)$  that",  
"of a transmit" is suggested changing to "of the transmit"; line 6: "this distortion compensation coefficient" is suggested changing to "the distortion compensation coefficient  $h(p)$ "; line 9: "a DA" is suggested changing to "a digital-to-analog (DA)",  
"analog signal" is suggested changing to "analog error signal"; line 12: "the distortion" is suggested changing to "a distortion"; line 13: "coefficient based upon" is suggested changing to "coefficient  $h_{n+1}(p)$  based upon"; line 15: "the distortion compensation coefficient" is suggested changing to "the distortion compensation coefficient  $h(p)$ "; line 16: "coefficient in said" is suggested changing to "coefficient  $h_{n+1}(p)$  in said"; line 18: "of a distortion" is suggested changing to "of the calculated distortion"; line 20: "coefficient before the distortion" is suggested changing to "coefficient  $h(p)_{MAX}$  before the calculated distortion"; lines 23 & 24: "the distortion" is suggested changing to "the calculated

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distortion"; line 26: "coefficient;" is suggested changing to "coefficient  $h(p)_{MAX}$ "; line 28: "coefficient by storing" is suggested changing to "coefficient  $h(p)$  by storing"; line 29: "of the distortion" is suggested changing to "of the calculated distortion"; line 31: "and storing" is suggested changing to " $h(p)_{MAX}$  and storing", "coefficient in said" is suggested changing to "coefficient  $h_{n+1}(p)$  in said"; line 32: "of the distortion" is suggested changing to "of the calculated distortion"; line 33: "coefficient." is suggested changing to "coefficient  $h(p)_{MAX}$ ."

Claim 22, line 2: "of the distortion" is suggested changing to "of the calculated distortion"; line 3: "coefficient, is" is suggested changing to "coefficient  $h(p)_{MAX}$ , is"; line 5: " $h_{n+1}(p)$  by correcting the" is suggested changing to " $h_{n+1}(p)$  by correcting the calculated"; line 6 " $h_{n+1}(p)/m$ " is suggested changing to " $h_{n+1}(p)$  divided by  $m$ ".

Claim 23, lines 7-8: "transmit signal  $x(t)$ ;" is suggested changing to "transmit signal"; line 13: "where by a" is suggested changing to "where by a second"; line 14 "frequency-multiplexed" is suggested changing to "second frequency-multiplexed", "signal  $x(t)$ " is suggested changing to "signal".

Claim 24 line 4: "frequency-shifted" is suggested changing to "the frequency-shifted"; line 7: "frequency-multiplexed" is suggested changing to "multiplexed frequency-shifted"; lines 8-9 & 14: "transmit signal  $x(t)$ " is suggested changing to "transmit signal".

Claim 34, line 6: "former" is suggested changing to "power of the distorted transmit signal", "latter" is suggested changing to "obtained power".

Claim 35, line 5: "latter" is suggested changing to "power of the distorted transmit signal"; line 6: "former" is suggested changing to "power of the transmit signal"; lines 7 & 11: "halt updating" is suggested changing to "halt the updating"; line 8: "the former and the latter" is suggested changing to "two powers".

Claim 36 line 6: "former" is suggested changing to "power of the distorted transmit signal", "latter" is suggested changing to "obtained power"; line 7: "the former and the latter" is suggested changing to "two powers; line 11: "in calculation" is suggested changing to "in the calculation".

Claim 37, line 2: "a DA" is suggested changing to "a digital-to-analog (DA)".

Claim 4 is dependent on the objected claim 3.

Appropriate correction is required.

### ***Allowable Subject Matter***

3. Claims 32-33 are allowed.
4. Claims 3-13, 21-24, and 34-37 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.
5. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or suggest, alone or in a combination, among other things, at least a distortion compensating apparatus for compensating for distortion of a transmission power amplifier and its method as a whole, the combination of elements and features as claimed, which includes a comparator for comparing power



of the transmit signal output from the predistortion unit and an upper-limit power before the calculated distortion compensation coefficient is stored in the memory ; and a distortion compensation coefficient updating unit updating the corrected distortion compensation coefficient when the transmit signal is greater than the upper-limit power; updating the calculated distortion compensation coefficient when the transmit signal is less than the upper-limit power; and a limit-surpass detector detecting the transmit signal from the output of the predistortion unit having surpassed a limit level, and an amplitude controller controlling the amplitude of the feedback signal when the limit level has been surpassed.

6. This application is in condition for allowance except for the following formal matters: See the claim objections section of this office action.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

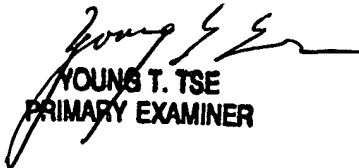
A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang  
June 14, 2005

  
YOUNG T. TSE  
PRIMARY EXAMINER